ADOPTION OF AGROFORESTRY OPTIONS IN LAND USE POLICY MEASURES IN NORTHERN AND SOUTHERN IRELAND

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Abstract

The research programme at AFBI Loughgall, Northern Ireland showed that silvopastoralism (wide spaced trees planted into grassland) can be a means of increasing tree cover and to facilitate sustainable intensification of grassland. Economic predictions and farmer surveys of agroforestry have been favourable but it is when agroforestry is accepted for state support that on-farm planting is likely to increase. In the current RDP (2014-2020) agroforestry was included as an option in forestry measures in Ireland and in 2017 as an option in the Environmental Farming Scheme (ie an Agricultural measure) in Northern Ireland. In both measures, the planting and management specification stipulated was largely based on the research findings from the AFBI research programme. Uptake has been encouraging and these farmers and land owners will form the nucleus of a group of examples in practice which hopefully will encourage other participants.

Keywords: farm policy; forestry policy; rural development; silvopastoralism

Background and rationale for agroforestry on the island of Ireland

Over the past 50 years production of livestock from grassland in Ireland has intensified substantially creating serious environmental problems such as reduced biodiversity and nutrient leakage into watercourses. It is EU policy to promote sustainable farming practices which attempt to address some of the damage caused by previous agricultural practices and go forward with land use policies which are sustainable. Such policies will focus on decreased levels of livestock output, tightened nutrient management on farms, increased tree cover to contribute to habitat heterogeneity, stabilisation of rural communities and enhancement of biodiversity through a more sustainable and lower input agriculture.

There is scientific evidence that the introduction of wide spaced trees in silvopastoral systems can make these grassland landscapes more sustainable, deliver a wide range of ecosystem services and align with a sustainable agriculture and forestry land management strategy. However tree cover in Northern Ireland (NI) (6%) is the lowest in Europe (mean 31%) and in Ireland is approximately 12%.

Silvopasture can be used to extend the grazing season to help higher grass utilisation and give resilience to grazing during extreme rainfall, while increasing biodiversity, carbon sequestration (Fornara et al. 2017), reducing water run-off and providing renewable fuel. Silvopasture might also be deemed to be more sustainable than farm woodland because of the intimate spatial integration of trees and agriculture and would include, for example, reduced wind and temperature stress and shelter for animals. There are additional benefits from root differentiation, a reduction in leaching losses of nutrients, faster nutrient cycling in the presence of grazing animals and reduced soil erosion (McAdam 2000). Additionally, silvopasture can make a positive impact on sustainable landscape and rural development, compared to conventional farm woodlands and forests, because of the diversity of employment opportunities created by multi-functional systems. Economic predictions are also encouraging. In Ireland, the

Department of Agriculture, Food and Marine sees agroforestry as making a contribution to producing veneer quality hardwoods, environmental protection, sheep and poultry welfare, to increasing carbon sequestration on a national level and sees future potential for principles of agroforestry being integrated into organic farming. This might be seen as a route to enabling eligibility of organic units within a forestry scenario.

Technical development of agroforestry

There has been an active research programme of agroforestry research in N I since 1989 (Sibbald et al. 2001; McAdam 2000). This programme was largely driven by the concept of improving grassland sustainability (ie from an agricultural perspective) and has shown that silvopastoral systems established in permanent pasture can deliver most of the ecosystem services referred to above. This was highlighted in the recent Sustainable Agricultural Land Management Strategy for NI (DAERA 2017). In Ireland, interest was shown in the NI trials from the perspective of increasing tree cover on farmland or previously afforested land ie from a forestry perspective). Both perspectives are equally valid and illustrate the potential for agroforestry to be a multifunctional land use option delivering a wide range of policy objectives.

Cooperation between the two jurisdictions was formalised and facilitated by the formation (in 2011) of an All-Ireland Agroforestry Initiative group with the objectives to:-

(a) Establish a network (ideally 4 at least) of agroforestry demonstration sites in N. Ireland and Ireland – at least one to include the use of wide spaced trees in conjunction with other agro- ecologically sustainable systems.

(b) Interact with both relevant authorities to promote the inclusion of agroforestry in Woodland Grant Schemes

(c) Promote knowledge transfer and awareness of agroforestry, either through 1 (above) or at other farm agroforestry events.

(d) Seek connectivity between agroforestry and e.g. IFA, Macra na Feirme, Community Groups, Woodland Trust. BIHIP.

Although the group only operated formally for a few years, it did bring the relevant parties in both jurisdictions together and the objectives have continued to be delivered.

Policy development

The success of the research programme at Loughgall and the realisation that it clearly presented the underpinning science for policy uptake has resulted in agroforestry being adopted into policy in both jurisdictions.

In *Northern Ireland*, an agroforestry establishment option was drawn up within the Rural Development Programme (RDP) under the Environmental Farming Scheme. The measure is justified under Priority 4 – "Restoring; preserving and Enhancing Ecosystems related to agriculture and forestry". The Option aims to "increase the area of agroforestry which will provide carbon sequestration benefits. The Option will also contribute to biodiversity, nutrient cycling and water quality. Agroforestry will integrate trees with crops and/or livestock on the same plot of land." The planting and management specification stipulated was based on the research findings from the trial reported above. Farmers/landowners accepted on the scheme still receive the Basic Payment and in Year 1: £1637.00 per ha; Years 2 – 5: £65.00 per ha each year. In the first call there have been 24 applications wishing to establish 32.5 ha of agroforestry, 64% of the target uptake. The applicants (all active farmers), cover a wide geographical spread.

In *Ireland*, in the previous RDP (2007 – 2013) there was an option to support an agroforestry initiative, however this did not materialise. The option was reintroduced in the current RDP

(2014 -2020) and this time there is an option to plant agroforestry. As a pilot project in 2012, 1.89 hectares were planted on a private livestock farm near Dunmanway, County Cork. The species used are mainly ash with some oak in the wetter areas. The design used was the basic design of single trees at 5 meter spacing with the plants protected by tree shelters.

All farmers/landowners accepted on the scheme will receive an establishment payment of €6220 per ha (in 2 tranches) and €645-660 per yr for 5 years. This was a substantial increase over the initial rates in tranche 1 of the scheme (€4450 per ha and €250 per yr for 5 years) and was awarded on the basis that a higher establishment specification was needed and the scheme was meeting EU objectives. In addition, agroforestry has great potential for planting in acid sensitive areas or in areas where the fresh water pearl mussel is in danger due to the low fertilizer, herbicide and cultivation inputs. There has been widespread support for the measure by NGOs and environmental lobbyists. Currently there are 46.95 hectares of agroforestry at various stages of grant approval.

Both these measures and options are based on the management prescriptions and system performance from the research site at AFBI Loughgall. Uptake has been encouraging and these farmers will form the nucleus of a group of examples in practice which hopefully will encourage other applicants.

Other developments

There have been other positive developments in Ireland. Some farmers and landowners have sought advice to introduce self-funded agroforestry projects on their land. One landowner cleared Sitka spruce from his land, reseeded it with grass and planted wide-spaced hardwood trees. He now grazes the area with sheep and in the summer will use the area for eco-tourism.

Another farmer is exploring the possibility of planting agroforestry in a plantation which had been recently cleared because of an infestation of ash die back.

The winners of a special award in the BT Young Scientist of the year competition in Ireland were a group of schoolchildren who submitted a project investigating “The relatively new land use, agroforestry, and its potential to offset carbon emissions from other agricultural sources” Curran et al (2017). Working with the farmer involved in the project referred to above in County Cork, they compared three different land uses for the sequestration of carbon: conventional pasture, agroforestry and conventional forestry for soil carbon. The students also looked at the amount of carbon stored in the biomass of the trees. They proposed that agroforestry is an attractive way for farmers to grow trees without tying up their land in forestry for long periods of time, as agricultural activity can continue beneath the trees. They found that 3.3% of farm emissions could be offset per year by the growth of agroforestry. They also found that agroforestry resulted in an increase in soil organic matter and therefore carbon. They concluded that agroforestry could be an attractive way for farmers to offset some of their greenhouse gas emissions by sequestering carbon, thus helping to reduce the levels of greenhouse gases.

Several major animal nutrition companies have expressed an interest in silvopastoralism as a system to enhance grassland utilisation on wet heavy soils.

Recommendations

Silvopastoralism can be succesfully supported either under agricultural or forestry measures. How the option is implemented will depend on the appropriate advice being given to the landowner.

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